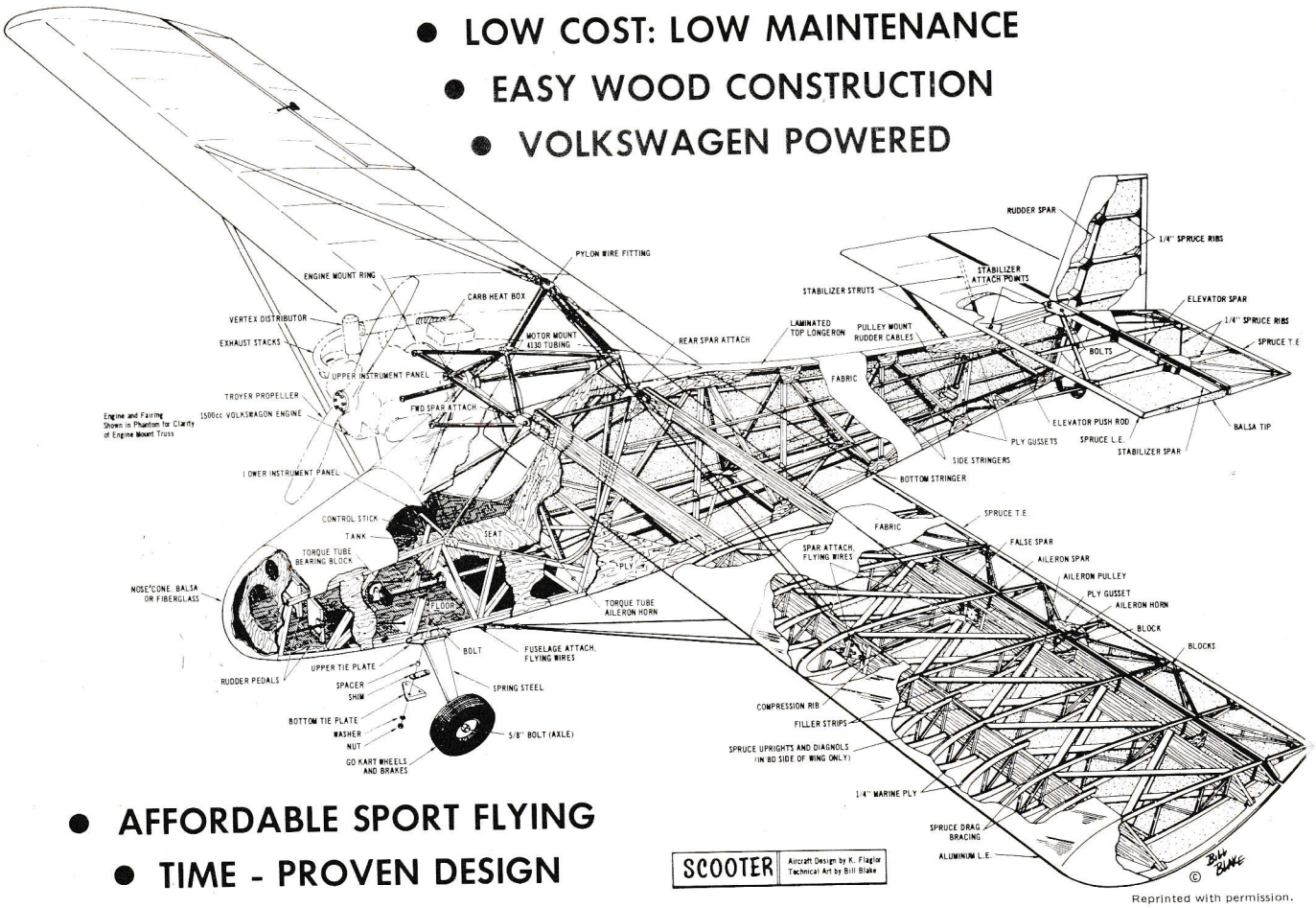
- LOW COST: LOW MAINTENANCE
- EASY WOOD CONSTRUCTION
- VOLKSWAGEN POWERED



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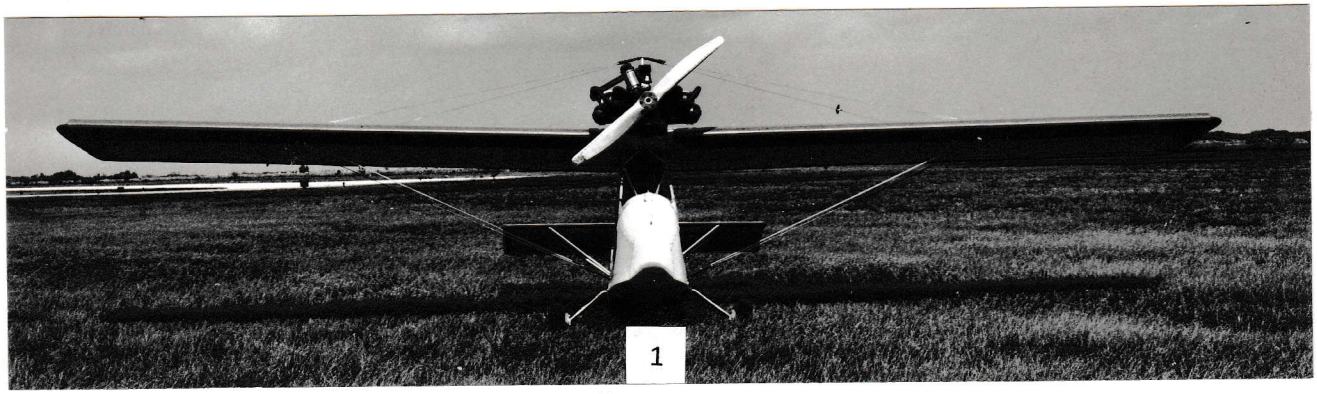
- AFFORDABLE SPORT FLYING
- TIME - PROVEN DESIGN

SCOOTERSPECS

Wingspan	27 ft. 10 in
Chord	4 ft. 2 in
Wing area	115 sq. ft
Wing loading	5.4 lb/sq. ft
Length	15 ft. 6 in
Empty weight	390 lbs
Gross weight	625 lbs
Cruise	70 mph
Top Speed	80 mph
Rate of climb	600 fpm
Takeoff run	250 ft
Fuel capacity	5 gal
Range	175 mi. (no res.)

Approximate Building Time

Fuselage	95	hours
Tail	35	hours
Metal fittings	50	hours
Wing ribs	20	hours
Wing assembly	68	hours
Align & rig wing	15	hours
Alum. leading edge	18	hours
Varnish wing	12	hours
Metal fairings	19	hours
Landing gear	20	hours
Instrument panel	30	hours
Gas tank	7	hours
Complete cover & paint	65	hours
TOTAL	454	hours



GENERAL SPECIFICATION

SPAN	28 FEET
LENGTH	15 FEET 8 INCHES
HEIGHT (PYLON)	7 FEET
TOTAL WING AREA	115 SQUARE FEET
AILERON AREA	12.5 SQUARE FEET
STABILIZER AREA	10.8 SUARE FEET
ELEVATOR AREA	7.7 SQUARE FEET
RUDDER AREA	5.6 SQUARE FEET
HIGH SPEED	80 MPH
CRUISE SPEED	65 – 70 MPH
RED LINE SPEED	95 MPH
STALLING	34 MPH
CLIMB	325 F.P.M.
WEIGHT EMPTY	390 POUNDS
WEIGHT LOADED	625 POUNDS
HORSEPOWER	25 – 40
ENGINE (VOLKSWAGEN)	1200 – 1600 CC

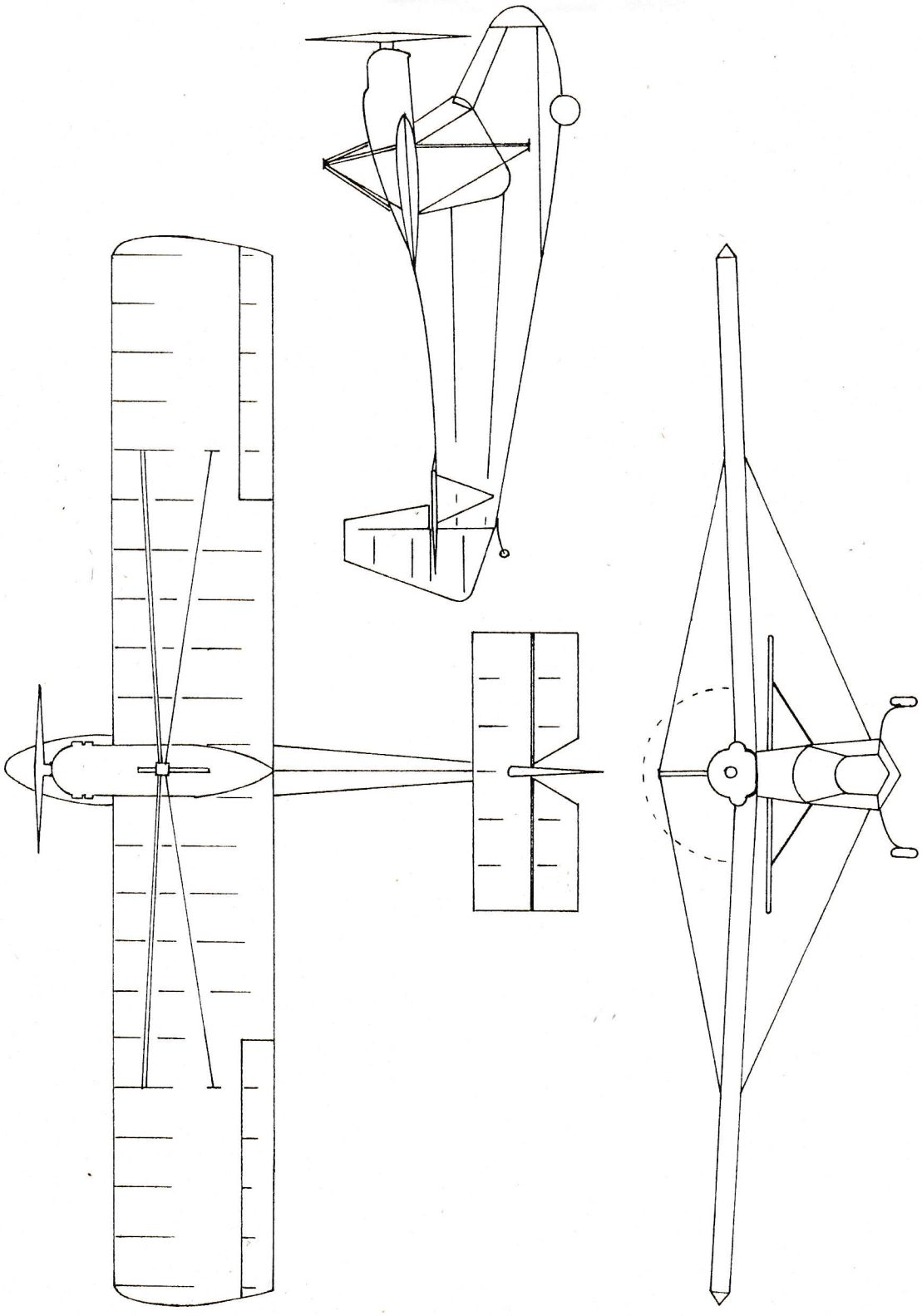
MAX. G. LOADS 3.8 POSITIVE, 2.5 NEGATIVE

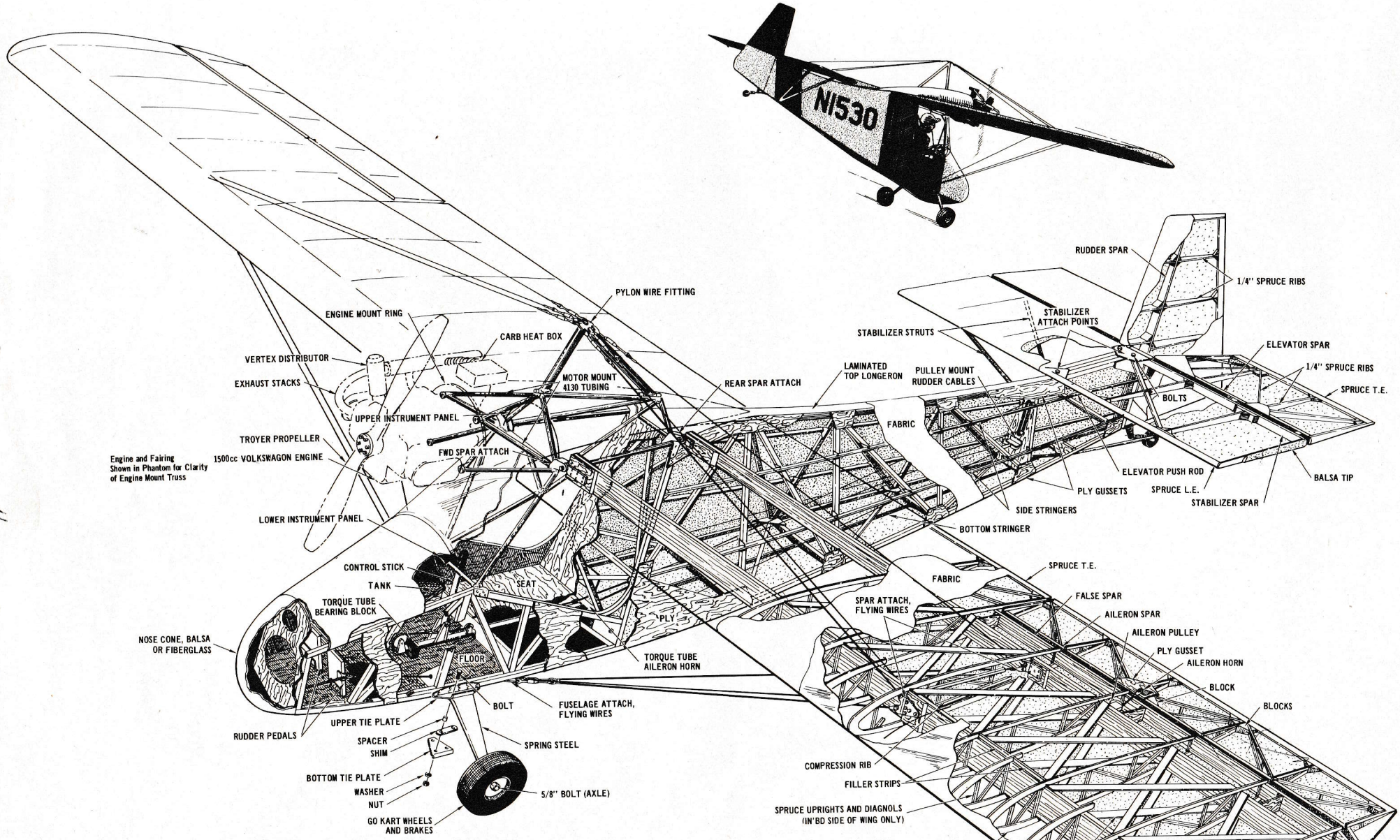
C. G. EMPTY – 29% M.A.C. (14.5" Aft L.E.)

C. G. LOADED (IDEAL) – 26% M.A.C. (12.5" Aft L.E.)

C. G. LOADED FORWARD LIMIT – 20% M.A.C. (10" Aft L.E.)

C. G. LOADED Aft LIMIT – 32% M.A.C. (16" Aft L.E.)





SPECIFICATIONS

Span	27' 10"
Chord	4' 2"
Wing Area	115 Sq. Ft.
Wing Loading	5.43 Lb. Per Sq. Ft.
Length	15' 6"
Empty Weight	390 Lb.
Gross Weight	625 Lb.
H.P. Range	25 to 40

Cruise Speed	70 MPH
Takeoff Speed	40 MPH
Landing Speed	35 PMH
Takeoff Run (Approx.)	300 Ft.
Rate of Climb	325 Ft. Per Min.
Fuel Capacity	5 Gal. (2 Gal. Per Hr.)
Range	175 Mi. – No Reserve
Airfoil	23012

SCOOTER

Aircraft Design by K. Flaglor
Technical Art by Bill Blake


N1386


N6WM
EXPERIMENTAL


EXPERIMENTAL


N1530

INTRODUCTION

Thank you for you order for the Scooter plans. I'm sure you will find it fun to build and will enjoy flying it. I believe that you will also find it a very safe and forgiving airplane along with instilling confidence and a great deal of satisfaction.

Modifications on the prototype were few. The initial flights were made using a Cushman 18 H.P. engine but his lacked the power to make the Scooter perform so the 1192 V.W. was installed. The first flights also showed the landing gear to be inadequate so this was changed to an aluminum gear and finally a heat-treated steel gear as your plans show. These early flights also made it apparent that too much balance was on the forward part of the rudder. This too was corrected to its shape as shown on your plans.

The above modifications have all contributed to make the Scooter a fine flying airplane. The only additional modification is the increased cockpit size for more comfort, and room enough for a six-foot pilot.

Please do not make any structural changes or use any larger engine than the 1600 V.W. (increased H.P. will not improve cruising speed appreciably).

Study the plans carefully and understand the instructions before building – this will save time in the long run. The pictures are provided for reference, use them frequently.

Should building an airplane be a new experience to you it is suggested that you join the Experimental Aircraft Association. Membership is $35.00 per year. E.A.A., P. O. Box 3086, Oshkosh, WI 54903-3086. Most of the items you will need to build your Scooter can be found in the E.A.A. magazine Sport Aviation. E.A.A. also has excellent publications on various phases of construction, which would be helpful.

Remember that before you cover your Scooter you must have it inspected by your local F.A.A. field representative. The F.A.A. must also inspect your Scooter before the first flight. Your local airport can give you the address of your nearest F.A.A. field office.

CONSTRUCTION POINTERS

The Scooter is designed so that marine plywood and sitka spruce can be used. Marine mahogany plywood was used on the prototype, marine fir plywood can also be used, and it is slightly heavier but also stronger. Do not use "exterior grade" plywood. The prototype also used marine spruce, if you use marine spruce you must select it carefully.

It must have 8-14 annular rings per inch and be straight vertical grain with runout no greater that 1-15. I suggest aircraft spruce be used for spars.

I use plastic resin glue and recommend it. The newer types of glue on the market for aircraft may also be used, but I do not have any experience with them. Whichever glue you use, follow the manufactures instructions exactly.

All nails are aircraft type – do not use brads. Most of the structure uses ½" x 20 ga. I use brass but coated steel is ok. You must have ¾ inch spacing between nails to get adequate pressure for the plastic resin glue.

When gluing gussets set all nails in place in gussets before mixing glue so that nails just have to be driven in after glue has been applied.

All metal fittings are made of 4130 Chromoly steel, normalized. Prime all fittings before installing. Use zinc chromate in the aerosol spray can.

Be sure to varnish wood surface under all fittings before they are mounted. The entire wood structure must have two coats of spar varnish before covering. The new polyurethane varnish is excellent.

A large steel washer must be used under the heads of bolts or nuts to prevent crushing wood. AN970-3 is used for 3/16 bolts and AN970-4 is used for ¼" bolts. Fender washers or plaster washers obtainable at hardware stores are handy for this application too.

All other hardware is aircraft quality and can be obtained at the local airport. Do not use wood screws or hardware store nuts and bolts.

FUSELAGE

A bench 2' x 14' is necessary to construct the fuselage. It can be made from a piece of ¾ x 4 x 8 plywood cut in half (2 pcs. 2 x 8) and butted together. Mount on a frame made of 2 x 4's and level. Fasten the legs to floor if possible to keep from shifting.

A full size bottom truss drawing is made directly on top of the bench. The truss is built on this drawing. (Use wax paper to keep the glue from sticking to the bench.) All longerons are held in place by small blocks nailed to the bench (blocks approx. 7/8 x 7 x 8 x 3").

The bottom truss is actually built upside down. That is: it must be removed from the bench and turned over to add floor. The two 7/8 square longerons are blocked in place first on the drawings, and then the crosspieces are carefully and tightly fitted into place.

The 1/8" plywood gussets are cut to shape and the ½" nails "set" into them prior to gluing. Be sure to leave out cross braces at seat back former (station #60 ½) and at rear main former (station #144). All pieces are then glued and nailed in place. You must have glue between <u>all</u> mating surfaces!

The truss can be removed after 12 hours or over night, turn over and add top gussets and floor.

A full size drawing is made of the seat back (station 60 ½) and of the rear main former (station #144). They are assembled in same manner as bottom fuselage truss.

When above units are completed the seat back is carefully fitted into the bottom truss and glued and nailed in place, you must hold proper sloping angle for the seat back.

The truss is now clamped to the bench (see photo #1) and the rear raised up to proper height. The rear main former can now be fitted and glued in place, use a carpenter level to get it vertical.

The ¼" top triangle piece (again photo #1) is leveled, nailed, and glued to top of seat back. Members of station <u>#84 ½</u> are installed at this time.

The top longeron, which is laminated of three pieces, is fitted into position in slot of top triangle and rests on top of rear main former (station #144). Glue and clamp all three

laminations in position, use a piece of wire anchored to bench and pull down longeron to get desired curve. See photos, study them carefully. When installing tail post be sure to use level on rear of top longeron. This must be level as stabilizer mounts to it!

Add all vertical members from bottom longeron to top longeron. Start in front (behind seat back) and work to rear. This is probably the "slowest" part of entire plane to build. Be patient, cut and try each piece to fit. It really won't take too long. Each piece must fit tight. Tilting table of your saw will help, adjust for each piece.

Be sure to plane or rasp a slight angle on outside of bottom longeron to match taper of vertical members, then install all side gussets.

The two front outside plywood panels are cut to shape, premark location for nails and "set" nails in place. Glue and clamp side panels to lower longeron and to seat back. Be sure both sides lean into center of fuselage the same amount, hold width of top of side panels with temporary braces.

After side panels are mounted all inside vertical spruce members are installed. Start at seat back and work forward. Premark location of each piece so nails can be "set" ahead of time. Use a flat steel block on inside of fuselage to "buck" against spruce piece when nailing.

The two top spruce sidepieces from nose former (station #10) to high point of sidewall (station #36) are straight pieces, wall at this time is curved. (See photo #6), by carefully "C" clamping these pieces together wall will straighten some and spruce piece will curve some.

Before installing inside plywood walls be sure you have filler blocks in place for seat belt support and at top of station #36. The front nose former can now be added and triangle reinforcement at station #32 (inside fuselage as shown in photo #10). After landing gear is attached the seat support and bottom stringer can be installed.

The steel tube, center section/motor mount, can be built on a plywood board and welded up complete but leave off the lower truss that comes down to the instrument panel area. After welding, the rear of the center section is then clamped in position on top of the seat back former and aligned to the fuselage using temporary wood supports. The sides of the lower truss are then fitted into place and welded to the upper mount while in position on the fuselage. The entire assembly is then removed from the fuselage and the internal members of the lower truss are added.

WING CONSTRUCTION

The wing ribs should be cut on a bandsaw but you can use a jigsaw or sabre saw. A full size rib pattern is provided so carefully trace it onto a ¼" sheet of plywood and cut out. This will be the pattern for all ribs. Make tops and bottoms of ribs separately. You will need 24 of each.

Stacking the plywood, several can be cut at one time (four is the suggested amount) three or four 1" nails will hold them together. Cut 14 full ribs and 10 full ribs with cutout for aileron spars. When all are cut out, the tops and bottoms are joined together with the ¼" sq. spruce strips and the small 1/8" plywood side plate at the nose. Make a total of eleven lefts and eleven rights. The two root ribs are double thickness, glue the ¼" sq. strips on one side only (make one left and one right) do not glue any of the ribs together at the trailing edge at this time! The false ribs can be made in one piece or separate tops and bottoms glued at nose like main ribs.

Before going any farther, you must decide what method of applying the aluminum leading edge covering you are going to use. The smoothest and most efficient is the most difficult to make. That is, covering the leading edge in a one-piece wrap from the bottom of front spar to the top of front spar using .016 2024-T3 aluminum. This method requires the aluminum to be pre-formed and does require considerable skill and "know-how" to get a first class job. Should this all be new to you, use the following simpler alternate method, covering the leading edge with separate top and bottom pieces. This method requires that you notch the nose of the ribs as shown on pattern and add the spruce strip the entire length of the leading edge. You then attach the aluminum to the bottom of front spar and nail it to this leading edge strip. The top aluminum cover then goes from top of front spar to leading edge strip, over lapping and nailing to leading edge. I have found that by using RTV (a silicone rubber adhesive) to cement the aluminum to all the ribs the nailing to each rib can be eliminated and a much smoother job is obtained.

Back to wing construction. Making the wing spars requires patience and care. Stretching a strong thread from one end to the other will help you get the edges of spars straight while planing to the desired shape. After the spars are shaped, the root plywood plates are glued in place. The next step is to carefully clamp the root fittings in position and drill the mounting holes – use drill press if possible. Varnish under these fittings then mount permanently.

Next, all the spars are clamped temporarily together so you can mark the rib location on them.

Before assembling the wings, you must have two very sturdy horses or supports. It is recommended that these horses be anchored to the floor or have very heavy objects holding them so they do not shift or get out of level. They must be perfectly level with one another when the "X's" are applied to the wing spars! These horses should be spaced with one in the first bay at root and one in the last bay near the tip.

With horses in position, slip rib #2 on the spars at tip of wing and slide to #2 position. Follow with the remaining ribs. (The vertical ¼" sq. strips on ribs are on root side.) The root rib will go on later. Slide rib #7 toward rib #6 and mount plywood plates for outboard wire fittings. After glue has set, the fittings are clamped in place and bolt holes drilled in spars. The fittings are now temporarily mounted in place. (They will be removed to fasten wires during rigging later.)

Sighting from end of wing, check that all ribs are properly lined up on spars. When satisfied, clamp the spars to the horses so they cannot shift or move and glue and nail ribs in place. Be sure everything is "square". Nail only through the ¼" sq. vertical strips on front and rear of spars. Do not nail <u>through</u> the plywood rib cap into spars.

Starting between rib #2 and #3, the cross-hatching can now be added, working toward tip, be sure horses are level and spars clamped to them. The cross hatching strips are glued and nailed to spars and glued and clamped where they cross one another. Be sure cross-hatching is on both top and bottom.

The aileron spar and false spar can now be slipped into their slots from tip of wing and glued in place. The trailing edge is now positioned on tip of ribs and sighted from ends of wing for alignment. Because the rear top and bottom of each rib has not yet been glued, it is possible to adjust the trailing edge up or down slightly. When aligned, glue and clamp rib caps together at same time trailing edge is glued and clamped in place.

After the angle ribs are installed on the aileron the entire aileron can be cut off of wing and finished. The false ribs, wing tip, and root rib can now be added. It is a good idea to check mating of wing to fuselage before mounting root rib in case some minor adjustment must be made.

The filler strips for the aluminum leading edge to fasten to (on top and bottom of front spar) and the aileron controls can now be installed. Do not attach the aluminum to the leading edge before the wings are rigged to the fuselage.

RIGGING AND WING ALIGNMENT TO FUSELAGE

Start by placing your carpenter level on the floor of cockpit and raise the tail until level, also shim either wheel for leveling from left to right. (Suggest blocking sides of fuselage to keep from shifting on landing gear.)

Both wings are temporarily clamped to the fuselage fittings in level position. Move the tips fore or aft until "square" with fuselage, by measuring from center of tail post to same point on both outer wing panels you can check alignment easily. A strong piece of thread stretched from wing tip rib to opposite wing tip rib 1" behind front spar is used to get both wing spars in line.

Total wing incidence is 3 degrees. Place your level up against bottom of both spars near the fuselage on one wing, when a wood block of 1 1/8 inches is placed between level and front spar (not on nail strip for aluminum) the bubble should be exactly centered. Be patient and don't rush.

When wings are aligned to your satisfaction all root fittings are drilled with a ¼" drill and then in steps opened up to 3/8".

After root fittings are drilled, install 3/8" bolts and raise both wings to 2-degree dihederal so the external brace wires can be made to length. Allow at least 12" of waste for each wire. Attach wires to outboard fittings of wing and finish that end while entire fittings are removed from wing. Mount fittings to wings permanently and stretch top wires to pylon turnbuckles and bottom wires to turnbuckles on lower fuselage fittings. Adjust the two top front wires first and secure. The two bottom front wires are next in same manner. Tighten up all four wires equal amounts. Repeat the same operation for the middle wires. When doing the rear wires be sure that the wings have the same incidence outboard as at the root. When all wires have been tightened, all turnbuckles are saftied except the lower three on one side of fuselage. These then can be loosened and the wings removed. Wings will now remain rigged. After coverings on final assembly just assemble to fuselage, tighten the three bottom turnbuckles, safety, and complete wing is rigged.

Do not over tighten turnbuckles. Have the barrel just cover the threads so when final tightened all threads are inside of barrel giving maximum strength. A rule of thumb is to tighten by hand as tight as possible and then with a nail inserted in hole give two more turns.

While wings are assembled to fuselage, the ailerons can be rigged. There are a total of three turnbuckles in this assembly. One in each rib bay in wing next to the fuselage, these are permanently attached to cables on top of aileron. The third turnbuckle is in center of fuselage (behind pulley bracket) that is attached to both lower aileron cables. This center turnbuckle is the only one loosened or tightened on assembly or disassembly.

The cables that come from the horn on lower torque tube go around pulleys on bracket and thru root rib to attach to turnbuckles in wings. Be sure to place an inspection ring and plate on top of wing in this area when covering so that cables can be attached on assembly.

FABRIC AND FINISHING

Before starting to cover, be sure to have F.A.A. inspect and sign the logbook. Check again for the last time that everything has been saftied and is secure. Be sure all wood structure has had two coats of varnish.

I recommend covering the Scooter with lightweight Dacron (glider grade). The Dacron is glued to the structure with super seam cement and shrunk with an electric iron. Using the following method no rib stitching is required. Apply two heavy coats of super seam cement to edges of all ribs before applying covering. After covering has been shrunk with the iron, soak a rag with thinner and wipe all ribs with it. The thinner will soften the cement and stick the fabric to ribs. This method not only saves time but also makes a much smoother and lighter job. You do not need to apply pink tape on ribs, just on seams and edges of wing. Three brush coats of thin nitrate dope or two coats of Dac-proofer and surface is ready for two spray coats of silver.

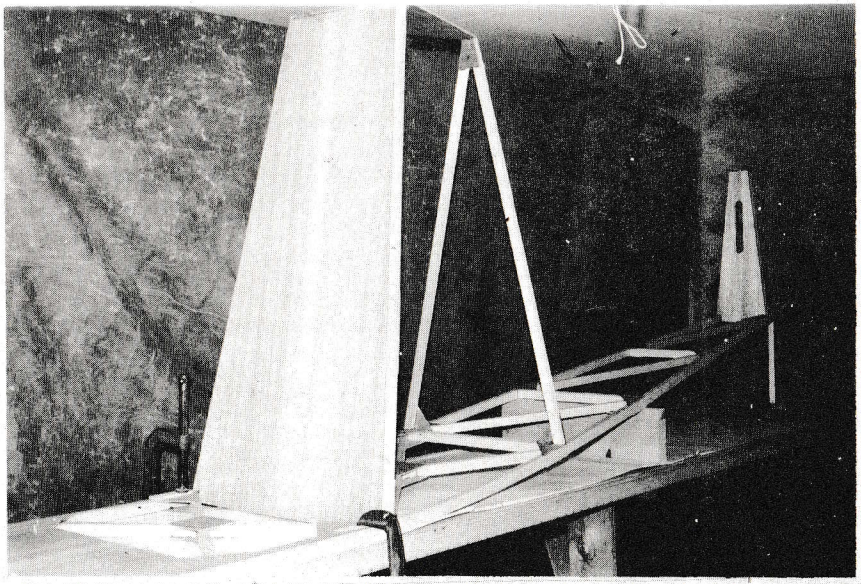
Be sure to apply drain grommets at all wood intersections so water can get out. You must add a fabric gap cover between all control surfaces at hinge lines. Your Scooter will not fly well without it! This four-inch strip can be cut from Grade "A" fabric. Apply it before spraying silver, keep it slack and tuck into slot between surfaces.

Finish the job with three coats of Butyrate color of your choice. It is recommended you purchase the "Dope and Fabric Handbook" from E.A.A. before starting to cover.

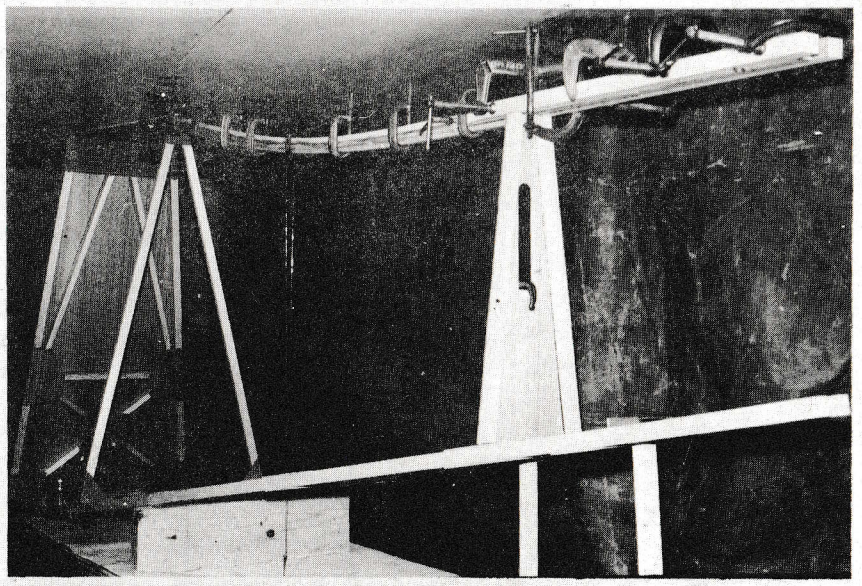
BILL OF MATERIALS

Item	Description			Qty.
	Stabilizer			
1. Leading edge	1" x 7/8" x 84" Edge grain on 1" surface			1
2. Trailing edge	½" x 1 ½" x 84"			1
3. Ribs	¼" x 1 ½" x 16 ½"			7
4. Diagonals	5/8" x 5/8" x 36"			2
5. Corner Block	1" x 1" triangular 16 Linear ft.			1
6. Blocking	½" x 1 ½" x 17"			1
7. Blocking	½" x 1" x 7"			1
	Elevators			
1. Leading edge	½" x 1 ½" x 39 7/16"			2
2. Trailing edge	5/16" x 1" x 34"			2
3. Ribs	¼" x 1 1/8" x 20"			12
4. Reinforcement	3/8" x 3/8" x 48"			1
	Rudder			
1. Vertical Spar	¾" x 2 ½" x 44"			1
2. Trailing edge	5/16" x 1" x 44"			1
3. Block	3/8" x 3" x 8"			1
4. Rib	¼" x 1 1/8" x 14"			1
5. Ribs	¼" x 2 ½" x 6"			3
6. Ribs	¼" x 2 ½" x 24"			5
7. Rib	5/16" x 2 ½" x 24"			1
8. Block	7/8" x 2 ½" x 8 ¾"			1
9. Corner Block	¾" x ¾" x 26"			1
10. Extra Material	¾" x 4" x 48"			1
	Wings			
1. Front Spars	¾" x 5 ¼" x 159"			2
2. Rear Spars	¾" x 3 ¾" x 157"			2
3. Aileron Spars	9/16" x 2 7/8" x 81"			2
4. False Spars	5/16" 3" x 83"			2
5. Trail Aileron Edges	5/16" x 1 ½" x 81"			2
6. Trailing Edges	5/16" x 1 ½" x 75"			2
7. Diagonals	1/8" x 1 3/8" x 30"			80
8. Vertical Truss Strips	¼" x ¼"	(Linear feet)		174
9. False Spar	½" x 5/8" x 2 7/8"			2
10. False Spars	½" x 5/8" x 3 ½"			8
11. Aileron braces	¼" x ¼"	(Linear feet)	42	4.62
12 Aileron Blocks	2" x 2 5/8" x 8"			2
13. Triangular Blocks	1" x 1" x ½" long	(Linear feet)		4
14. Diagonals	3/8" x 3/8"	(Linear feet)		16
15. Horizontal Compression Struts	½" x 5/8" x 5"			4
16. Vertical Compression Struts	½" x 5/8" x 2"			6
17. Spar Filler Strips	¼" x ½" x 158"			12
18. Nose Nailing Strips	3/8" x 3/8" x 154"			2

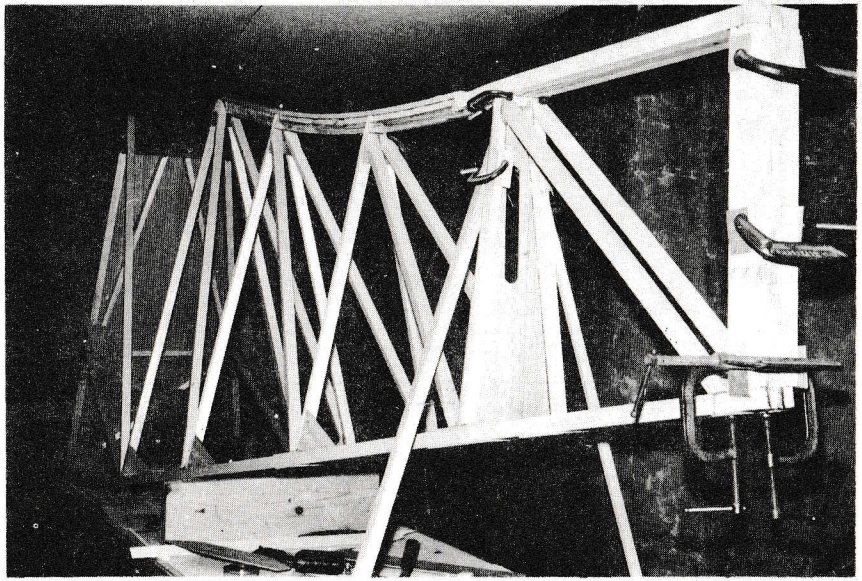
Item	Description	Qty.
	Fuselage	
Keel Truss		
1. Longerons	7/8" x 7/8" x 160"	2
2. Station & Diagonal Braces	7/8" x 1 ½" x 24"	1
" "	5/8" x 7/8" x 20"	24
" "	" 24"	24
" "	" 26"	12
" "	" 30"	12
" "	" 34"	24
" "	" 36"	24
" "	" 48"	24
" "	¾" x 7/8" x 15"	4
" "	" 17"	4
" "	" 20"	4
" "	" 24"	4
" "	7/8" x 7/8" x 15"	2
" "	" 24"	2
" "	7/8" x 1" x 20"	1
Side View of Fuselage		
1. Bottom Stringer	3/8" x ¾" x 148"	1
2. Side Stringers	¼" x 5/8" x 96"	2
3. " "	¼" x 5/8" x 102"	2
4. Fuselage Members	5/8" x 7/8" x 12"	2
" "	" 18"	2
" "	" 24"	2
" "	" 28"	2
" "	" 30"	2
" "	" 36"	2
" "	" 42"	2
" "	" 45"	2
5. " "	½" x 1 3/8" x 24"	4
" "	" 36"	4
6. " "	7/8" x 7/8" x 14"	8
" "	" 18"	8
" "	" 24"	8
7. " "	7/8" x 4" x 6"	2
" "	" 12"	2
8. " "	7/8" x ¾" x 24"	2
9. " "	5/8" x 7/8" x 24"	1
" "	" 28"	4
" "	" 32"	2
10. Top Longeron	7/16" x 5/8" x 72"	1
" "	3/8" x 7/8" x 72"	1
" "	7/16" x 5/8" x 90"	2



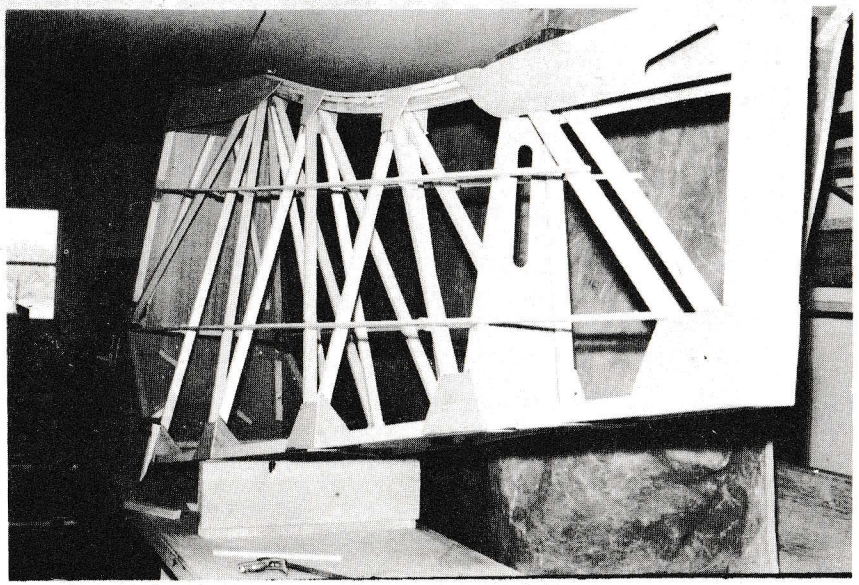
1. Bottom truss clamped to work bench and raised up 5-1/2" in foreground and 16" at tail post. Note small scrap wood pads under "C" clamps so that structure isn't crushed or damaged. Bench must be level and solid.



2. Top longeron glued and clamped in place, note wire holding it down for curved shape. Side pieces at top of tailpost are guled and clamped. Slot is ready to receive vertical tail post.

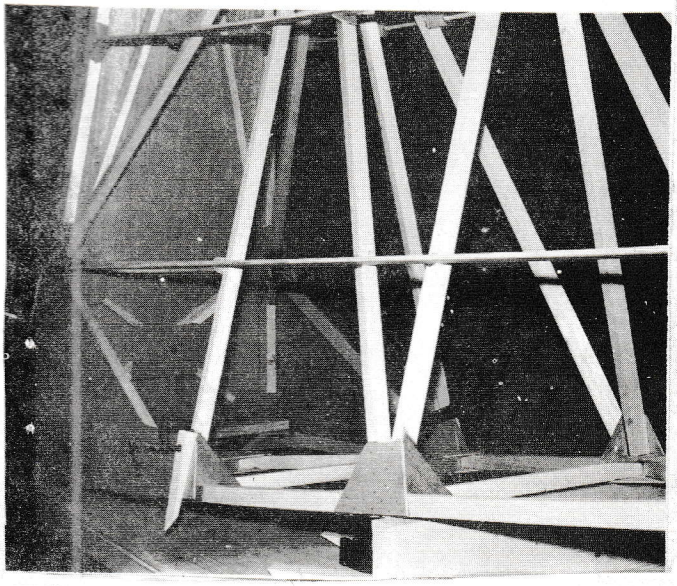


3. Top longeron cap has been added, rear tail post in position and side pieces clamped in place. Note braces to bench to hold alignment. Use carpenter level frequently to keep everything true and square.



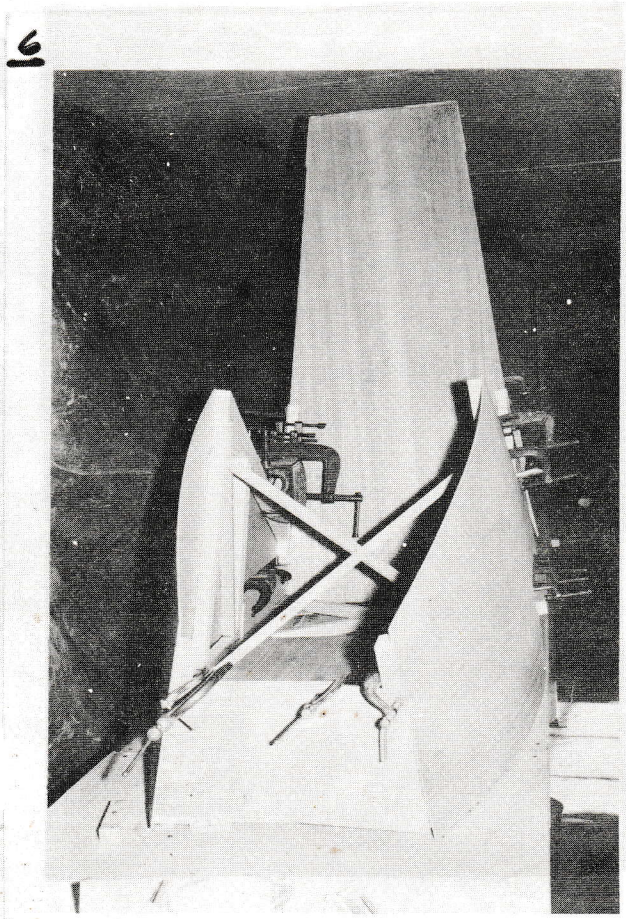
4. All wood structure completed in aft fuselage. Long plywood gusset plate has been modified on your drawings. Note that the side stringers have been installed.

5



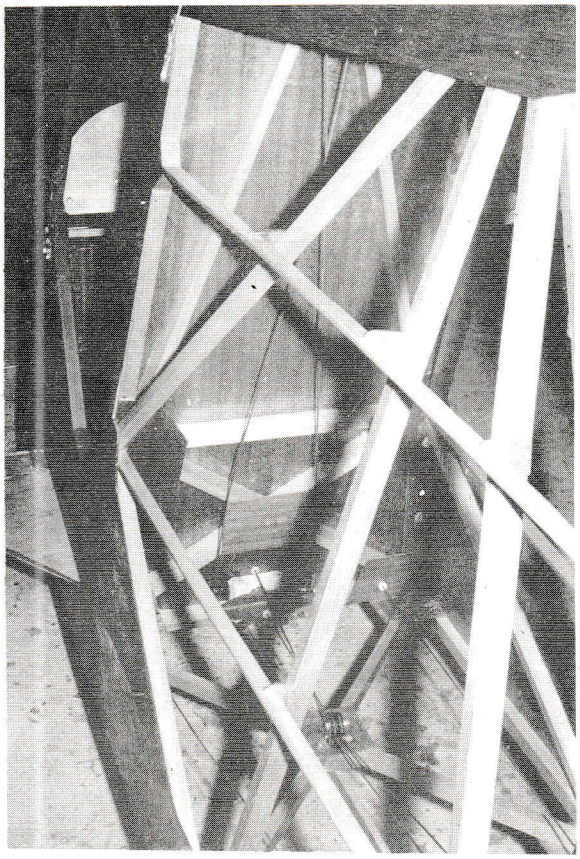
5. Front plywood sides glued to bottom truss and seat back. On prototype plywood seat extended outside thru fuselage in slot to support landing gear. This was later changed. Yours will not have slot, seat goes in later. Notice method of attaching stringers with small plywood supports.

6



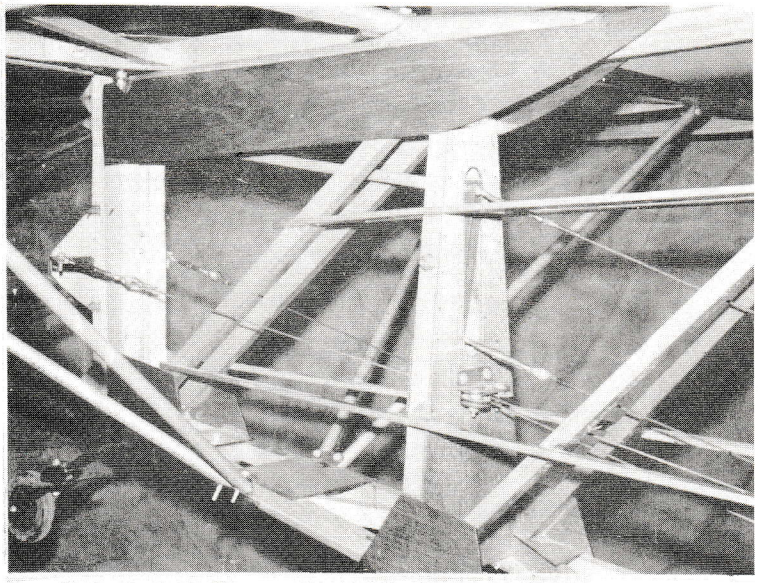
6. After outside skin is glued to bottom truss all internal members are added. Note temporary braces to keep alignment and small plywood board at front to support sides. This picture shows how narrow prototype is. Yours will be wider and higher in this foreward area.

7



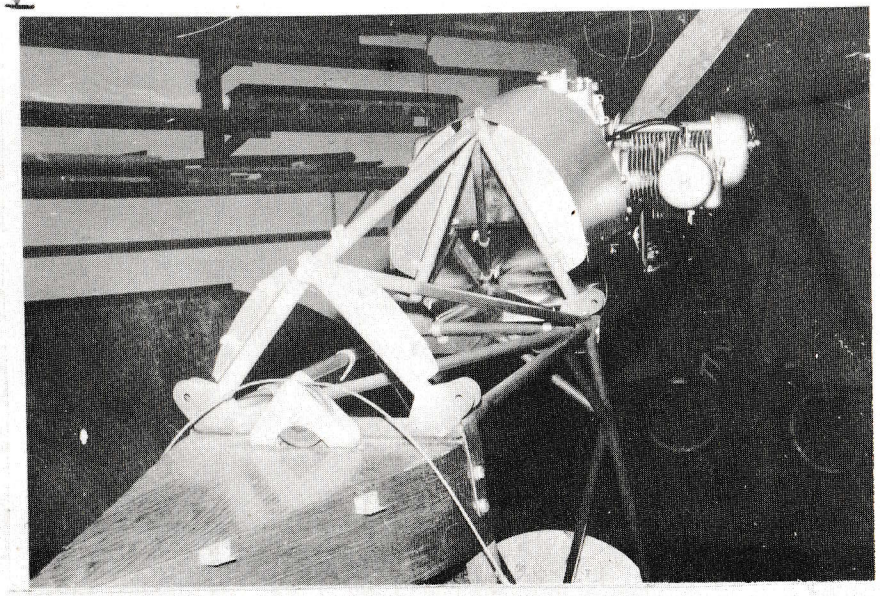
7. Aileron horn and cables in view, note torque tube in wood bearing blocks also cable guides and rudder cables on sides of fuselage. Elevator pulley bracket in lower center. Aileron cables cross one another-- be sure they do not rub together when rigged with wing. Aileron pulley bracket on top of fuselage can be shimmed to prevent wires rubbing together.

8



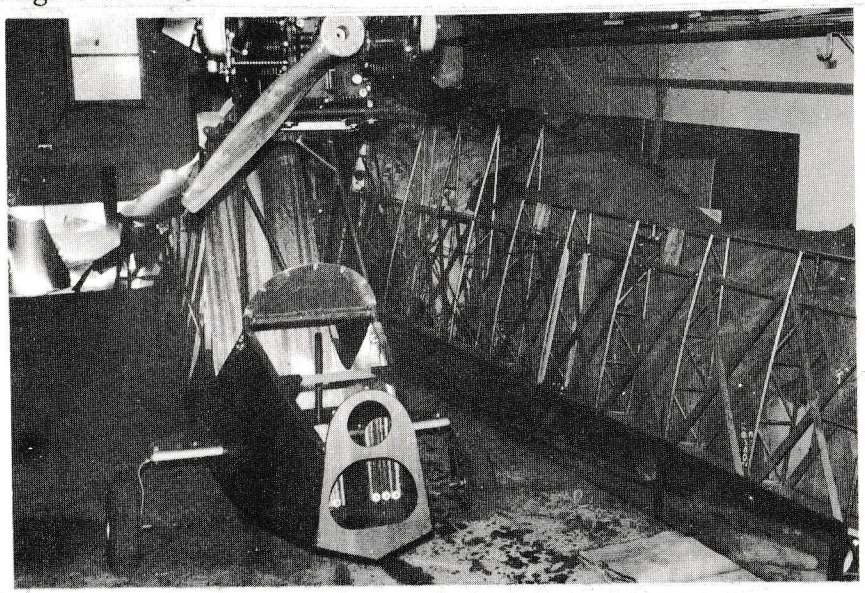
8. Stabilizer in position with aluminum struts fitted. Note control cables, turnbuckles, and walking beam. Balsa fairing under and ahead of stabilizer.

9



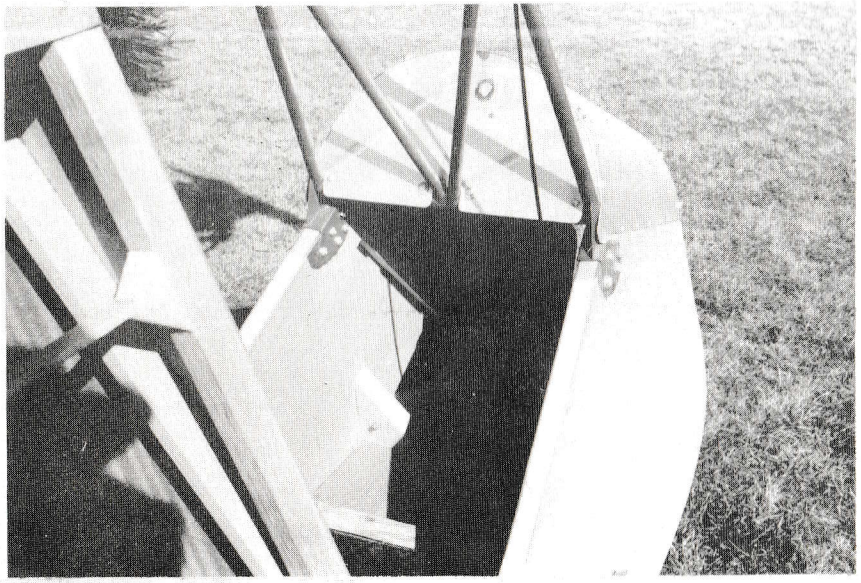
9. View showing aileron pulley bracket with cables installed. Also top metal fairing and support formers. Your wing root attachment fittings slightly longer making easier drilling and assembly.. (Cushman engine shown).

11



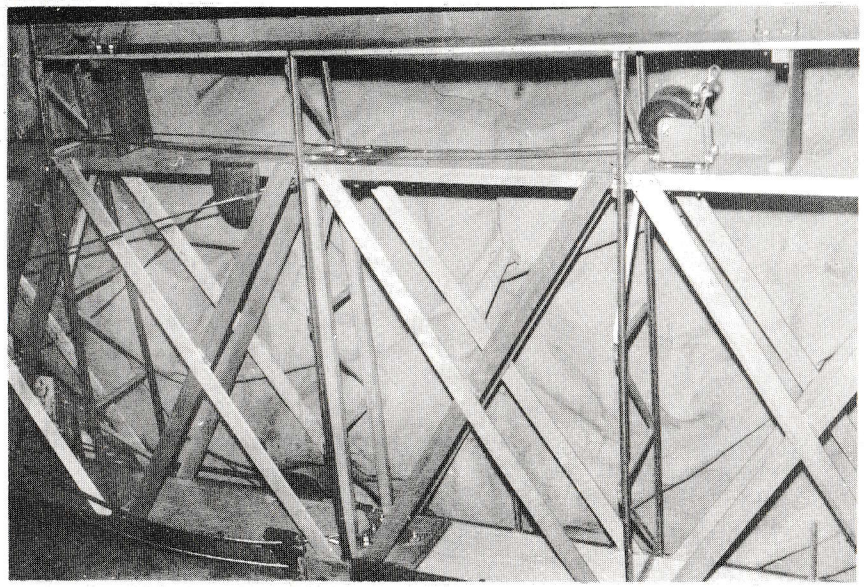
11. Front view of nose former, also rudder pedals visible. Landing gear later changed.

10



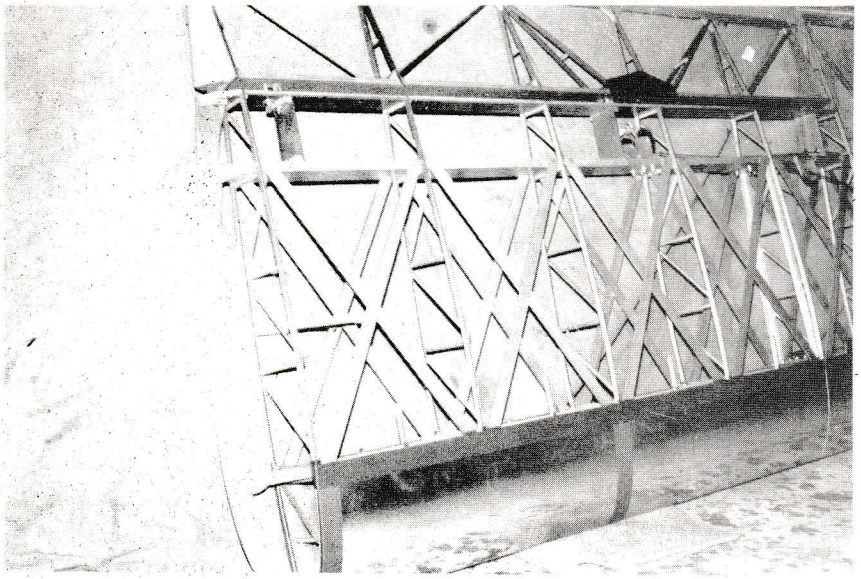
10. Small reinforcing triangle inside fuselage easily seen. Also rudder cable guide is visible. Again note your fuselage will be 2" wider and higher than that shown.

12



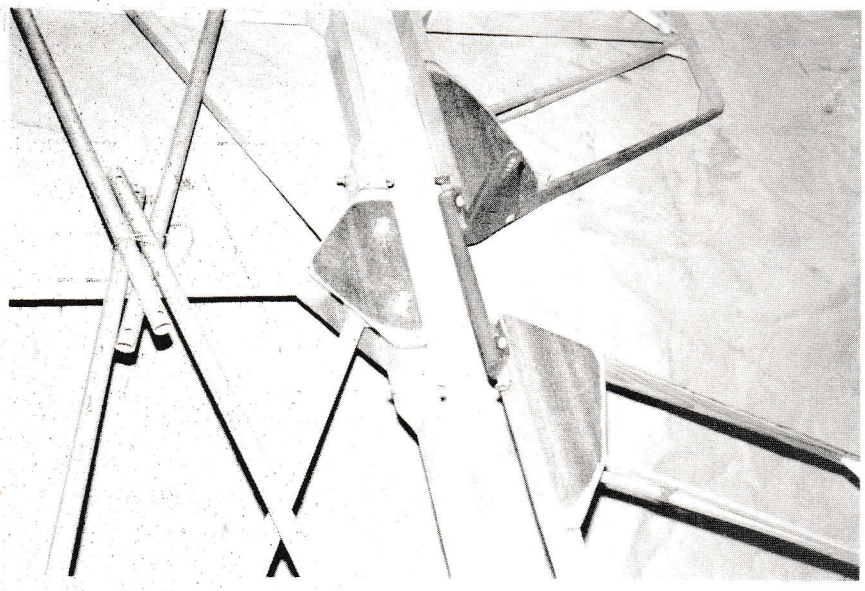
12. Aileron pulleys and cables installed. Flying wires in place. Note plywood fairing blocks that wires pass thru. Note wood compression members along rib between spars at wire fitting location. Cross hatching takes up drag and antidrag as well as compression on rest of wing.

13



13. Plywood wing tip, balsa aileron tip, notice small strip of wood that supports center of tip rib to cross hatching both top and bottom. (Keeps fabric from pulling rib in.)

14



14. Stabilizer center-- showing method of attachment elevators together and elevator horn. Hinges changed on your drawings.